

## Whole-rock REE composition of the Miyazu granite

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The Miyazu granite is distributed around northern part of Kyoto Prefecture and Hyogo Prefecture in southwestern Japan. It was formed during Late Cretaceous to Paleogene age and it is a batholith with a size of about 30 km in a diameter. It consists of coarse grained hornblende biotite granite in the middle to northern part and medium grained biotite granite in the southern part. K-Ar ages of the Miyazu granite are  $64.8 \pm 1.5$  Ma and  $67.2 \pm 1.5$  Ma (Nishigaki, 2010). Rb-Sr ages and initial Sr ratios of the Miyazu granite are determined by mineral and whole-rock isochron methods (Terakado and Nohda, 1993). These Rb-Sr ages are obtained by well-aligned two separated isochrones yielding ages of  $61.9 \pm 0.9$  Ma and  $60.4 \pm 0.9$  Ma with initial Sr ratios of  $0.70725 \pm 0.00003$  and  $0.70769 \pm 0.00004$ , respectively. Such a difference in initial Sr ratios may suggest that the granite was not formed from a single original magma by simple crystal differentiation at the time of the emplacement. Recently, very few studies are done for the Miyazu granite in this area after the report of K-Ar ages and whole-rock chemical composition of major and trace elements by Nishigaki (2010). In this study, we focused on rare earth elements (REE) of the Miyazu granite to obtain petrogenetic information. The major and trace elements were measured by X-ray fluorescence spectrometry (XRF). The rare earth elements were measured by inductively coupled plasma-mass spectrometry (ICP-MS). In the major elements,  $\text{SiO}_2$  content ranges from 64.4 to 74.0 wt.%.  $\text{TiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Fe}_2\text{O}_3$ , MnO, MgO, CaO and  $\text{P}_2\text{O}_5$  are decreased and  $\text{Na}_2\text{O}$  and  $\text{K}_2\text{O}$  are increased with increasing  $\text{SiO}_2$ .  $\text{SiO}_2$  gradually increases from south to north within the batholith. In the trace elements, Th, Pb and Rb are increased and Sr, Zr, Zn, Co and V are decreased with increasing  $\text{SiO}_2$ . These elements make a trend on the Harker's diagram, however, the other elements do not show a clear trend. Chondrite-normalized REE patterns show rich in light rare earth elements (LREE) and a tendency to be decreasing to the heavy rare earth elements (HREE). Samples from north or south area show positive or negative Eu anomaly, and samples from middle area only show negative Eu anomaly. In south area, the degree of Eu anomaly show a trend of decreasing with increasing the total REE contents. However, this trend is not observed in north or middle area. It shows different trends on the La/Yb - CaO and La/Yb - Sr diagrams in each area. Based on the above results, it is considered that the Miyazu granite is not originated from a single parental magma.

### References

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